

REMARKS

Claims 1-50 have been cancelled. New claims 51-67 have been added. Support for the new claims can be found throughout the specification. No new matter has been added.

Rejections of the Canceled Claims

Prior claims 1-5, 8-15, 17-19, 25, 27, 29-30, 34-36, and 39-45, and 47 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,922,604 to Stapleton et al. ("Stapleton"). Office Action at 4. Each of independent claims 1, 25 and 44 related to a device having a chamber body including an optically permeable chip. Each of independent claims 1, 25 and 44 related to a device having a single reaction chamber. The single reaction chamber is either adapted to amplify and characterize nucleic acids almost simultaneously therein (claim 1) or for almost simultaneous reaction and characterization of nucleic acids (claims 25 and 44).

The Examiner argued that the "almost simultaneous" language did not further define the device, and thus did not withdraw rejections over Stapleton based on that amendment. Office Action at 2 and 9-10. Nor did the Examiner accept Applicants arguments that claims 1, 25 and 44 defined three distinct elements, in contrast to two elements taught in Stapleton. In particular, the Examiner stated that "the claims are not so limited as to require a body having an edge for holding the chip as illustrated." Office Action at 9.

Claims 1-50 have been canceled without prejudice.

New Claims

New claims 51-67 are directed to a device for duplicating and characterizing nucleic acids in a reaction chamber. The device includes a reaction chamber defined by:

a chamber support having an optically permeable first surface facing the reaction chamber;

a chamber body sealingly placed on the chamber support and including:

a recess having an edge configured to support a chip; and

an inlet providing fluid communication between the reaction chamber and an environment external to the reaction chamber; and

an optically permeable chip, sealingly supported by the edge of the recess, and having a second surface facing the reaction chamber, the second surface having an array of multiple different polynucleotide probes immobilized thereon, where the first and second surfaces are substantially parallel. See independent claim 51.

Claim 51 defines the device with three distinct elements: a chamber support, a chamber body, and an optically permeable chip. The chamber body includes a recess having an edge. The chip is sealingly supported by the edge of the recess. Applicants believe the claim clearly indicates that the chip and the chamber body are distinct elements, constructed separately and sealed together in the finished device.

Stapleton does not describe a devince that includes a chamber body including a recess having an edge, and an optically permeable chip, sealingly supported by the edge of the recess. See claim 51, and the specification, e.g., at 7 and 11, and FIGS. 1-2, illustrating the relationship of chamber support, chip, and chamber body. In particular, the chip is "held by chamber body 1 through the edge 42 thereof" (see FIG. 2). The specification explains at 11-12 that the chip can be, for example, silicon or glass, whereas exemplary materials for chamber body include glass, nylon, PMMA, Teflon, polycarbonate, polystyrene, and topaz. The different choices of materials for the two elements reinforces the conception of chip and chamber body as distinct elements.

In contrast, Stapleton describes a device having only two elements: a base and a cover. See, e.g., col. 5, line 64 to col. 6, line 9, and FIG. 1. The microprobe array is immobilized on either the base or the cover (col. 5, lines 40-44). Nothing in Stapleton indicates that an array is immobilized on a third element, i.e., a chip distinct from the base and cover. For at least this reason, claim 51 and the claims that depend from it are not anticipated by Stapleton.

Nor does Stapleton teach a device having first and second surfaces (the second surface having an array of multiple different polynucleotide probes immobilized thereon) where the first and second surfaces are substantially parallel. See Stapleton at, for example, FIGS. 3 and 4, and at col. 7, lines 9-17, reproduced below with emphasis added.

... the apparatus comprises a sloped feature projecting from the surface of at least one of said two opposing walls, the projection is selected from a group consisting of a cone, a pyramid, a parabola and combinations thereof, and gradually increases in height from the base of the projection towards its apex, forming a thin capillary space between two opposing walls, wherein said thin capillary space gradually increases in height from the apical region of the sloped feature and towards its base region.

Stapleton thus teaches that the opposing walls, supplied by the base and the cover, are not substantially parallel, but rather include a sloped feature.

Applicants respectfully ask that claims 51-67 be allowed.

CONCLUSION

Applicants ask that all claims be allowed. Please apply any charges or credits to deposit account 19-4293.

Respectfully submitted,

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